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ABSTRACT

A study was undertaken to develop an evaluation procedure that could be used to analyze the cognitive requirements of instructional materials used to teach beginning reading. The study involved four phases. The first phase, an examination of the literature in order to create a basis for the development of assessment procedures, included an examination of the works of J. Piaget and of interpretations of his developmental theory. The second phase involved a review of research evidence and expert opinion concerning the major principles to be included in the procedure. The third phase, the actual development of the procedure, considered such factors as ease of use, time and training required for use, and objectivity. The fourth phase was a pilot study in which the procedure was applied to the selection of reading materials by educators and by the researcher. The findings of the pilot study suggest that the procedure would be useful in aiding writers and publishers to make needed changes so the basal texts will be more suitable for use with children at various cognitive developmental stages. (FL)

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A PROCEDURE TO EVALUATE COGNITIVE REQUIREMENTS OF BEGINNING READING MATERIALS

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Summary

Because all young children do not learn to read easily, educators are continually searching for causes of reading difficulties and for corrections of such problems. Jean Piaget's research has pointed out that young children do not think in the same way as older children and adults. It is possible that materials used to teach beginning reading require children to think in ways that may be beyond their present ability. Such requirements could account for some reading problems and also for negative attitudes toward reading which some children develop. It was the purpose of the present research to develop a procedure to be used to evaluate beginning reading materials in terms of cognitive requirements. Such a procedure would be useful in making textbook selection decisions. It could also be used by teachers as a guide to modify existing materials and by writers and publishers as a guide for material development.

Introduction

Teachers of young children are well aware that all children do not learn to read easily. Because of the many factors interacting in the teaching-learning process, a wide range of possibilities can be considered as causes for such difficulty. Such causes might include factors relating to the child, the teacher, the physical surroundings, or to the materials used in reading instruction. One such possibility could involve reading materials and activities which assume a level of cognitive development beyond that of some of the children with whom they are being used (MacGinitie, 1976b).

Almy (1971) explored the cognitive development of children and the related implications for teaching. She pointed out that a lack of awareness of developmental levels often leads to the erroneous conclusion that young children think in basically the same way as older children and adults. A knowledge of the developmental levels of children makes one aware that there are cognitive expectations which are inappropriate for certain children. If the reading materials and teaching strategies used to teach beginning reading were shown to make excessive cognitive demands, the inappropriate combination might represent a possible cause of reading difficulties.

Much of classroom instruction in reading is centered around the use of commercially prepared materials, especially basal readers. In 1969, Sheldon observed that about 90 percent of the reading material market in United States schools at that time was accounted for by eight basal programs. More recent work (Barnard & BeGracie, 1976) revealed the continued prevalence of basal readers but noted that new basal reading programs differ considerably

from previous editions. Some of the differences in newer editions are broader ethnic representation, higher literary quality of stories, reflection of a more realistic society, the variety of career roles shown for adults, and more graphics. Barnard and DeGracie hypothesized that since content had changed, vocabulary load had also changed. Their analysis of first grade materials indicated a 56 percent increase in the number of words compared to basal systems used ten years earlier. It would seem logical to assume that conceptual or cognitive load may also have become more difficult than in readers used several years ago. Inspection of several first grade reading texts suggests that this may be true.

The teachers' manuals which accompany these basal readers provide suggestions for activities and lessons for presentation to children. It is during these lessons and activities that the cognitive development of the children involved must be given consideration. A child who cannot think in the way required by the activity may become frustrated and may not benefit from the lesson being presented. Jenkins (1978) suggested that the distaste many children have for reading may be due to such requirements. He said that the process of learning to read as it is usually defined in the classroom may be beyond the cognitive ability of many six-to-nine year old children.

Statement of the Problem

MacGinitie (1973, 1976a) pointed out that there are many steps in reading instruction which seem logical to adults but which may make little sense to 6 year olds. An examination of teachers' manuals which accompany primers and first readers has shown a discrepancy between the conceptual

development and logical operations implied by the instructions and what is known of children's conceptual development and ability to perform logical operations at the age of six or seven.[1] In these examinations, the instructions were often found to assume a far more advanced development than children possess. Athey (1976) commented that an understanding of the child's cognitive development would have implications for the kinds of reading materials suitable for different age groups. MacGinitie (1973, 1976a) suggested that instructional materials and procedures should be analyzed for the operations they require.

These statements lead to the conclusion that reading materials which are being used with young children should be examined in terms of their cognitive requirements. At the present time, however, there is not a scale, checklist or assessment device which has been developed for the purpose of analyzing or assessing the conceptual difficulty of instructional reading materials.[2] Without such an instrument or procedure, a systematic assessment of the cognitive demands of beginning reading materials is not feasible.

Statement of the Purpose

The purpose of the study was to develop an evaluation procedure which could be used to analyze the cognitive requirements of instructional materials used to teach beginning reading.

Importance of the Study

An instrument which will aid in the evaluation of reading materials in terms of cognitive demands will assist teachers and administrators in

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[1] W. H. MacGinitie, personal communication, March 29, 1979.

[2] Ibid.

the selection of materials for classroom use. By making teachers aware of this concern, it may help them modify materials currently in use in terms of the cognitive demands placed on children. The instrument would also help writers and publishers of reading materials. It should aid them in the development of materials and activities which are more suitable for the developmental level of the children for whom they are intended.

Theoretical Framework

Cognitive development and conceptual acquisition are complex and diverse areas which have been widely researched and have been the subject of much debate in theoretical presentations. Because these theories are not always congruent and because a synthesis of existing theories would probably not maintain the ideas of any single theorist, it was decided that one major theoretical position would be used on which to base the development of the evaluation procedure for the present study. The theoretical position chosen was Jean Piaget's cognitive developmental theory. The reasons for choosing this position are the same as those outlined by Waller (1977).

> First, it is one, if not the, dominant and best known extant theory of cognition. Second, it is comprehensive and developmental. Third, from the theory there are some fairly clear inferences to be drawn about reading. (p. 1)

In addition, Piaget's theory has gained wide acceptance as is evidenced by the number of people who draw upon it as a reference point. Although Piaget himself puts emphasis on the child's development outside school or laboratory settings, his theory is being called upon increasingly to give basic guidelines for education and has gained a place of preeminence in educational thought and practice (Sinclair & Kamii, 1970).

Piaget has given much attention to the development of thinking and logical operations in young children. Although his is not an "age-based" theory, he has addressed the topic of the approximate ages at which the ability to perform these logical operations can be expected. Piaget outlined developmental stages which, according to his theory, are invariant in sequence.

The first formal attempt to teach children to read generally takes place in the first grade of school at the approximate ages of five to seven years. Since the ages usually included in first grade make up the transition period between preoperational thought and concrete operational thought, it is common to find a first grade class with children at both of these stages as well as in a period of transition between the two stages.

The stage of preoperational thought generally lasts until about , or 8 years of age. The thinking of preoperational children is not necessarily deficient but is qualitatively different from that of older children and adults. These differences often account for "unusual" answers given by young children and difficulties they might have with certain kinds of cognitive tasks.

The thinking of children during the stage of preoperational thought is dominated by what <u>seems</u> to be rather than by what logically <u>must be</u>. Attention is usually focused on the most striking characteristic of a situation rather than being able to consider more than one aspect of a situation at the same time. The thinking of preoperational children is not reversible. They are not always able to mentally return to the starting point in a series of events. Preoperational children are generally considered to be egocentric. That is, they are not able to consider matters from

the point of view of another person. While it cannot be argued that pre-operational children cannot be taught to read, Piaget's work leads us to believe that some types of instruction might be appropriate for children at the preoperational stage of development, while other methods might not be appropriate for that stage. In the present study, Piagetian theory was reviewed for such possible inconsistencies as they relate to beginning reading instruction.

Overview of Procedures

Research methodology which is experimental and hypothesis-testing is probably the most widely accepted methodology in educational research. Kerlinger (1973) pointed out, however, that there are necessary preliminary activities to hypothesis-testing in scientific research. It was to fulfill the need for such preliminary research activity with respect to this area that the present study was conducted.

Katz (1953) delineated two major types of studies. The two types were exploratory and hypothesis-testing. Exploratory studies were described as an attempt to predict what <u>is</u> rather than to predict the relationship that will be found. Katz (1953) said about the exploratory study, "It represents the earlier stage of a science. From its findings may come knowledge about important relationships between variables . . ." (p. 74). Although hypothesis-testing is a very important part of educational research, it should be preceded by carefully conducted exploratory study.

The exploratory study was especially suited to the present research because of the state of the art in the area of cognitive requirements of beginning reading materials. While literature relating Piaget's theory of

cognitive development to beginning reading instruction was available, no procedure to evaluate beginning reading materials based on cognitive requirements was found. Exploration was needed to see if such a procedure could be developed. There was also a need to explore the complexities of the relationship between Piaget's cognitive developmental theory and beginning reading instruction.

The study involved four phases. First was an examination of the literature to serve as a basis for the development of the assessment procedure. Included was an examination of translations of the original works of Piaget as well as secondary works which provided interpretive information about his developmental theory.

The second phase of the study was also accomplished through the literature review. Research evidence and expert opinion were examined for identification of major principles for inclusion in the procedure to evaluate beginning reading materials in terms of cognitive requirements. After major principles were identified from the literature, validation of the principles was accomplished by judgments from a panel of experts in the fields of early childhood education, reading, and psychology. The panel members were selected from the faculty and participants of the Interdisciplinary Institute in Reading and Child Development (Waller, 1977) or from suggestions of those participants. Upon consent to participate in this process, seven panel members were asked to rate each principle in terms of appropriateness for use with preoperational children and also for importance for inclusion in the procedure.

The third phase of the study involved the actual development of the procedure. The ratings and comments of the panel of experts guided the

development. Consideration was also given to factors such as ease of use, time and training required, and objectivity of the procedure.

The fourth phase consisted of a pilot study of the procedure. Educators such as those who might participate in textbook selection decisions were asked to use the procedure and answer questions concerning its use. These educators represented five groups--first grade teachers, elementary school principals, elementary school librarians, system-level supervisors, and college or university professors. Three people from each group were used for a total of 15 participants in the pilot study. So that comparisons could be made, all participants were instructed to use the same sample of instructional material. The procedure results and responses to the questionnaire were used as the basis for the revision of the instrument.

The second part of the pilot study consisted of application of the procedure by the researcher. Because the first part of the pilot study used a text based on synthetic phonics, samples of three other types of readers were used in the second part of the pilot study. The three categories were an analytic program, a linguistic program, and a program with literary emphasis.

Summary of Results of Content Validation, Instrument Development, and Pilot Study

The first step in constructing the procedure was to derive from the literature principles or assumptions about the appropriateness of certain activities, content, and instructional methods for young children. Before consideration was given to the format of the procedure or how these things would be identified within beginning reading materials, validation of the content of the procedure was undertaken.

The expert panel method was used for the establishment of face validity and content validity. The panel consisted of experts in the fields of early childhood education, reading and psychology. Each panel member rated each principle in terms of appropriateness for use with preoperational children and also for importance for inclusion in the procedure.

Results of validation procedures demonstrated a lack of consistent agreement across panel members. Such lack of agreement was particularly evident in the response concerning whether or not a certain activity is inappropriate for preoperational children. Comments from panel members pointed out the many complexities of an investigation into the relationship of Piaget's theory to beginning reading instruction. Panel members emphasized the need for empirical data to verify each activity as inappropriate for preoperational children.

Panel members were asked to list additional activities, methods, or requirements which they would consider inappropriate for reading instruction with preoperational children; however, no additional principles were suggested. Based on the responses of the experts on the panel, coverage seemed to be complete, and content validity was supported.

A weighted score was assigned to each response from panel members. A predetermined score was needed for inclusion of a principle in the exploratory version of the procedure. On this basis, the procedure was developed.

The procedure which was developed included an introduction and directions as well as a checklist to be used for the analysis of materials. Each item gave a brief explanation and examples of what was to be examined in the book under consideration. A response from three alternatives was then to be chosen for each item which best described the material. A section

was provided for totals to be determined. Three statements concerning the appropriateness of beginning reading materials for use with preoperational children were provided. After totals were analyzed, the statement which was most appropriate for the material being reviewed was to be chosen.

The purpose of the procedure is to assess one aspect of materials designed for use in beginning reading instruction. That aspect is the cognitive requirements expected or implied in the materials and instructional suggestions and whether they are appropriate to the cognitive development of the children with whom they are to be used.

The procedure was not designed to replace other rating devices and scales which can be used to evaluate other aspects of reading materials. Readability scales and other such procedures are valuable tools and are recommended for use in conjunction with the procedure to evaluate cognitive requirements. Use of multiple techniques to evaluate various aspects of beginning reading materials will provide more reliable date on which to base decisions than any of the techniques would provide if used in isolation.

During the pilot study, fifteen in-service educators used the procedure with a beginning reading book. The book used was a text based on synthetic phonics. Although the results of the pilot study were not totally consistent, a reasonable degree of consistency across raters was obtained. The procedure was then used by the researcher with samples of three other types of reading programs--an analytic program, a linguistic program, and a program with literary emphasis. Use of the procedure with different approaches showed that the procedure discriminates between types of instructional material. Pilot study results were used to revise the procedure.

Summary of Conclusions and Recommendations

During the literature review for the present study and also during procedure development, it became apparent that the relationship of Piaget's theory of cognitive development to beginning reading instruction is a complex area of study. Several authors were identified who stated that assessment of reading materials in terms of cognitive requirements is needed. All of them pointed out the difficulties involved in such an analysis. The professionals used on the expert panel also commented on the difficulty of the task.

Despite this difficulty, there seemed to be general agreement that some tasks are suggested or implied by directions or activities of basal readers for young children which are beyond the cognitive development of some children with whom such materials are being used. It was concluded that some problems experienced by beginning readers may be caused by such requirements. As early as 1957, Vernon identified "cognitive confusion" as the fundamental and basic characteristic of reading disability. She conducted a review of studies concerning reading difficulty and concluded that the cognitive processes underlying the ability to learn to read effectively have not come under sufficient investigation. Downing (1969) emphasized that if cognitive confusion is, in fact, the fundamental characteristic of reading disability, then the cognitive processes of beginning readers must be of central concern to reading teachers.

Phillips (1975) emphasized the importance of matching the developmental stage to the teaching sequence and/or the measurement procedure being used. If a basal series is found to be inappropriate for children at the pre-operational stage of development, the use of such materials should be delayed

until the child has attained the level of concrete operational thought. To do otherwise runs the risk of frustrating the child and possibly damaging his or her self-concept and attitude toward reading.

Dechant and Smith (1977) addressed the topic of attitude toward reading and how it is influenced in the early stages of formal reading instruction. These authors made an interesting distinction between learning not to read and not learning to read. That idea was discussed further by Hoffman and Fillmer (1979). It seems that the idea of reading activities and/or materials which require thinking skills beyond the ability of young children is directly related to this issue. When children become frustrated by such requirements, they may withdraw from the reading act, develop negative attitudes toward reading, and actually learn not to read. On the other hand, children who are not exposed to such materials and activities may in fact not learn to read. However, when cognitive development has progressed sufficiently, such activities can be used, and the child should learn to read because negative attitudes toward reading will not be a factor. The time previously spent with inappropriate activities could be used to develop a love for reading, to help the child understand the functions of print, and to engage in activities to stimulate cognitive development.

Jenkins (1978) noted that the child of any age who has not reached the stage of concrete operations will most likely have difficulty with reading. However, unless negative attitudes interfere, this difficulty will not be permanent. He said:

> It can be expected that the pre-operational eight year old will read like a normal pre-operational child--with difficulty. When logical thought emerges, he should be capable of reading print if the self-concept has not been damaged in the process of learning to read. (p. 135)

The procedure developed in the present study would be useful in aiding writers of basal texts and publishers in making needed changes in future editions. It is recommended that such alterations be given careful consideration to make the materials more suitable for use with preoperational children. It is further recommended that attention be given to alternative ways of teaching reading to children who have not yet reached the stage of concrete operational thinking. Some educators have recommended that formal reading instruction be delayed until the child is eight or nine years old or even older. It must be realized, however, that in most cases our society expects reading instruction at six. If this expectation continues, appropriate methods of teaching reading to preoperational children need to be further explored and implemented.

For the above suggestions to be useful, it is important that teachers be trained to ascertain the developmental level of the students being taught. Such training should be provided in teacher preparation programs and would prepare teachers to make needed alterations in instructional programs to suit the developmental level of children.

A further recommendation concerning the preparation on the part of pre-service and in-service teachers of young children is that college texts on reading instruction should include a chapter or section on young children's thinking and how it relates to reading instruction. Downing (1969) noted that most college texts do not contain such information. Waller (1977) also mentioned that college reading texts do not usually contain any reference to Piagetian work.

As was pointed out earlier, the present research was of an exploratory nature. While important information was obtained and a preliminary version

of a procedure to evaluate cognitive requirements of beginning reading materials was developed, further research is needed. The procedure should be used further with a wide range of materials and by a variety of raters. Data should be collected so that reliability can be monitored and revisions made as needed. Hypothesis-testing research is needed to determined whether a procedure such as the one developed in the present study will discriminate between basal texts in which preoperational children are successful and those in which they are not as successful.

Further investigation should be conducted into activities and methods which are successful in reading instruction with preoperational children. Anthropological research could possibly be beneficial in this area. All such investigations should be aimed at improving reading instruction for children at all developmental levels.

LIST OF REFERENCES

Almy, M. Wishful thinking about children's thinking. In R. H. Anderson & H. G. Shane (Eds.), As the twig is bent--readings in early childhood education. Boston: Houghton Mifflin, 1971.

Athey, I. Developmental processes and reading processes--invalid inferences from the former to the latter. In H. Singer & R. Ruddell (Eds.), Theoretical models and processes of reading. Newark. Del. : International Reading Association, 1976.

Barnard, D. P., & DeGracie, J. Vocabulary analysis on new primary reading series. The Reading Teacher, 1976, 30, 177-180.

Dechant, E., & Smith, H. Psychology in teaching reading (2nd ed.). Englewood Cliffs, N. J.: Presntice-Hall, 1977.

Downing, J. How children think about reading. The Reading Teacher. 1969, 23, 217-230.

Hoffman, S., & Fillmer, H. T. Thought, language, and reading readiness. The Reading Teacher. 1979, 33, 290-294.

Jenkins, L. The relationships between cognitive development, language development, and reading ability in children ages six-to-nine (Doctoral dissertation, 1978). Dissertation Abstracts International, 1978, 39, 1294A. (University Microfilms No. 7814838)

Katz, D. Field studies. In L. Festinger & D. Katz (Eds.), Research methods in the behavioral sciences. New York: Holt, 1953.

Kerlinger, F. N. Foundations of behavioral research. New York: Holt, 1973.

MacGinitie, W. H. Children's metalinguistic concepts and reading. New York: Teachers College, Columbia University, 1973. (ERIC Document Reproduction Service No., ED 078 391)

MacGinitie, W. H. Difficulty with logical operations. The Reading Teacher, 1976, 29,371-375. (a)

MacGinitie, W. H. Research suggestions from the "literature search." Reading Research Quarterly, 1976, 11, 7-35. (b)

Phillips, J. L. The origins of intellect: Piaget's theory. San Francisco: W. H. Freeman, 1975.

Sheldon, W. D. Basal reading programs: how do they stand today? In N. B. Smith (Ed.), Current issues in reading. Newark, Del.: International Reading Association, 1969.

Sinclair, H., & Kamii, C. Some implications of Piaget's theory for teaching young children. School Review, 1970, 78, 169-183.

Vernon, M. D. Backwardness in reading, a study of its nature and origin. New York: Cambridge University Press, 1957.

Waller, T. G. Think first, read later! Piagetian prerequisites for reading. Newark, Del.: International Reading Association, 1977.